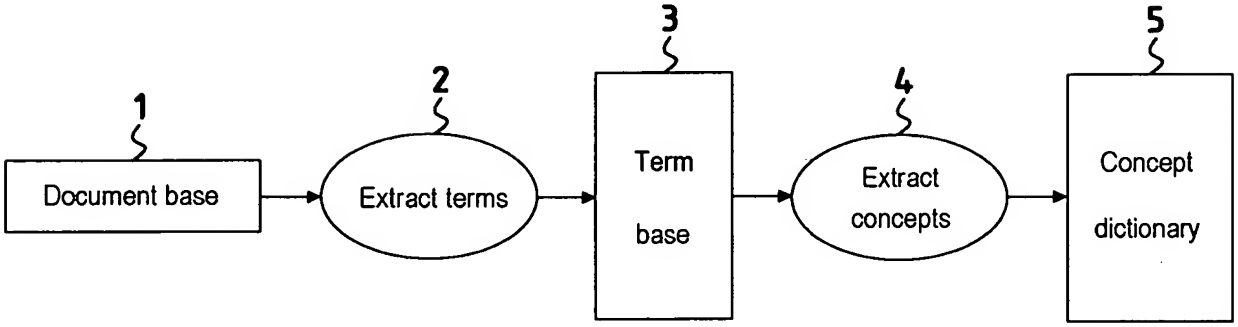

FIG.1

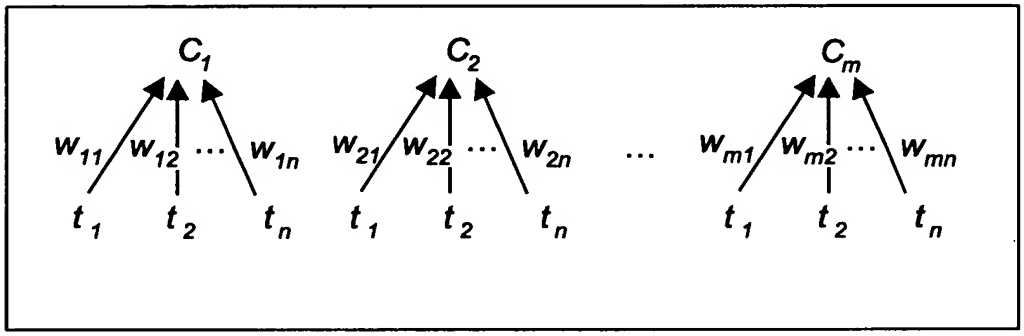

FIG.2

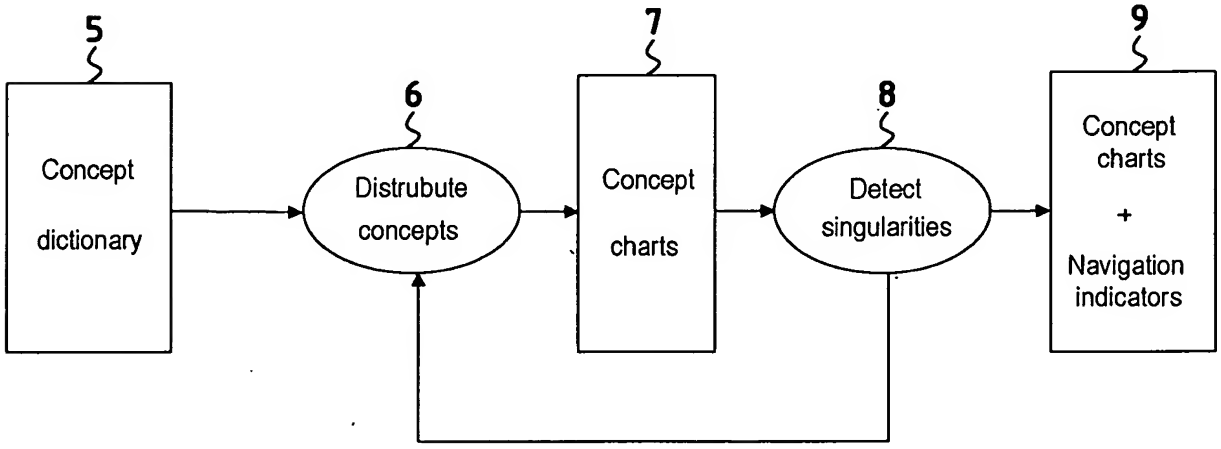

FIG.3

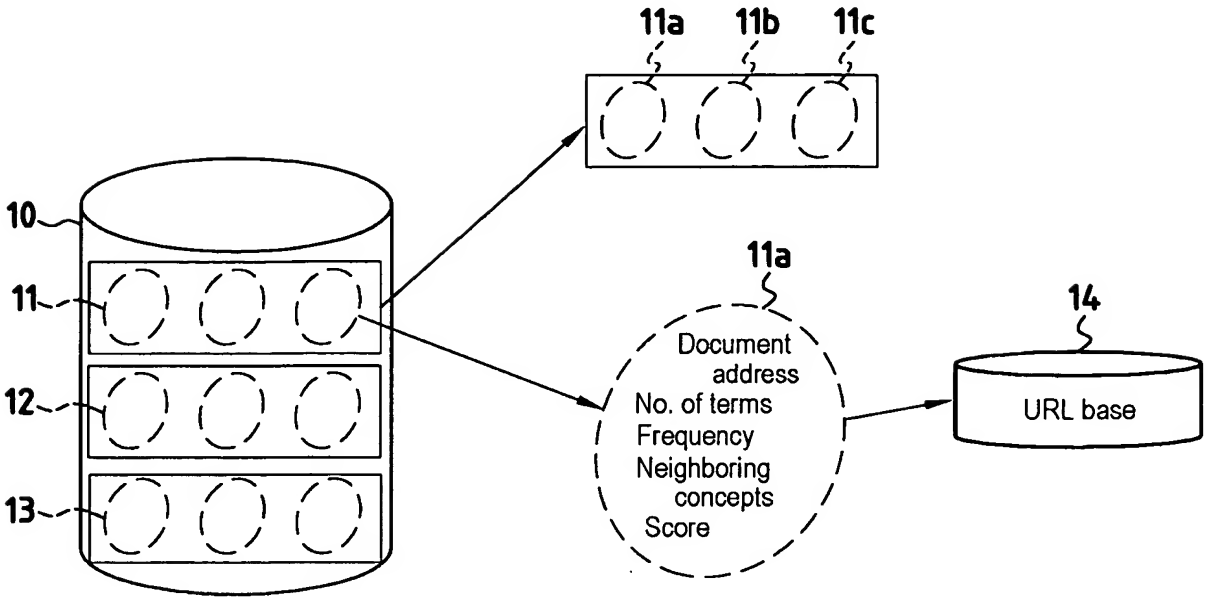
11a
11b
11c
10
11
12
13
11a
Document address
No. of terms
Frequency
Neighboring concepts
Score
14
URL base

FIG.4

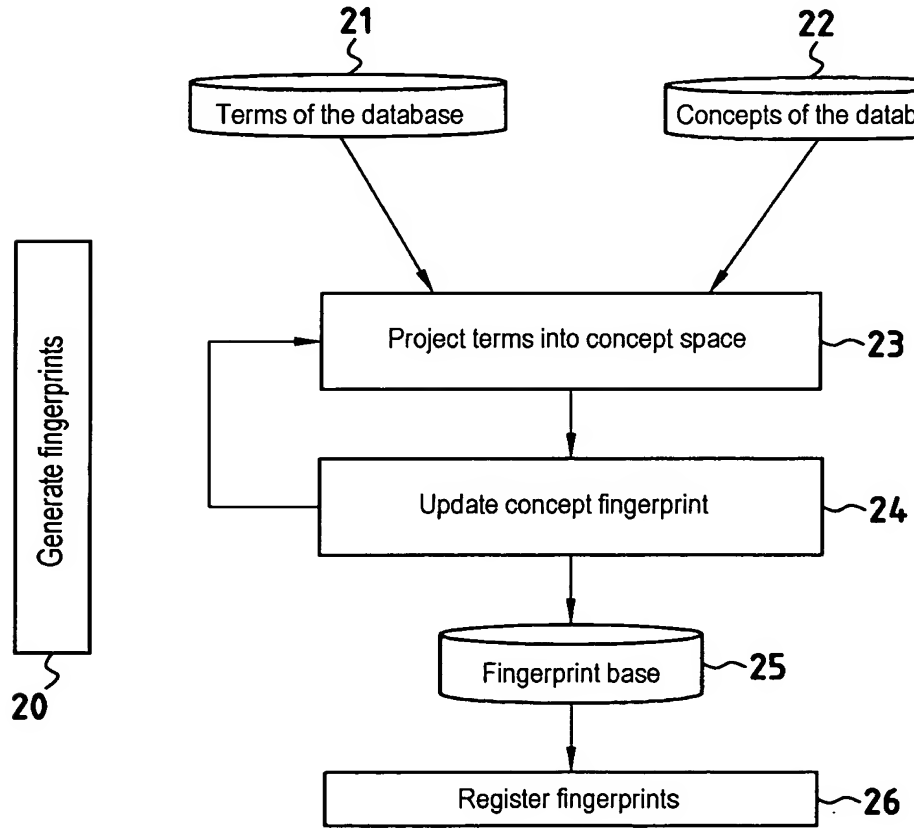
21
Terms of the database
22
Concepts of the database
Generate fingerprints
20
Project terms into concept space
23
Update concept fingerprint
24
Fingerprint base
25
Register fingerprints
26

FIG.5

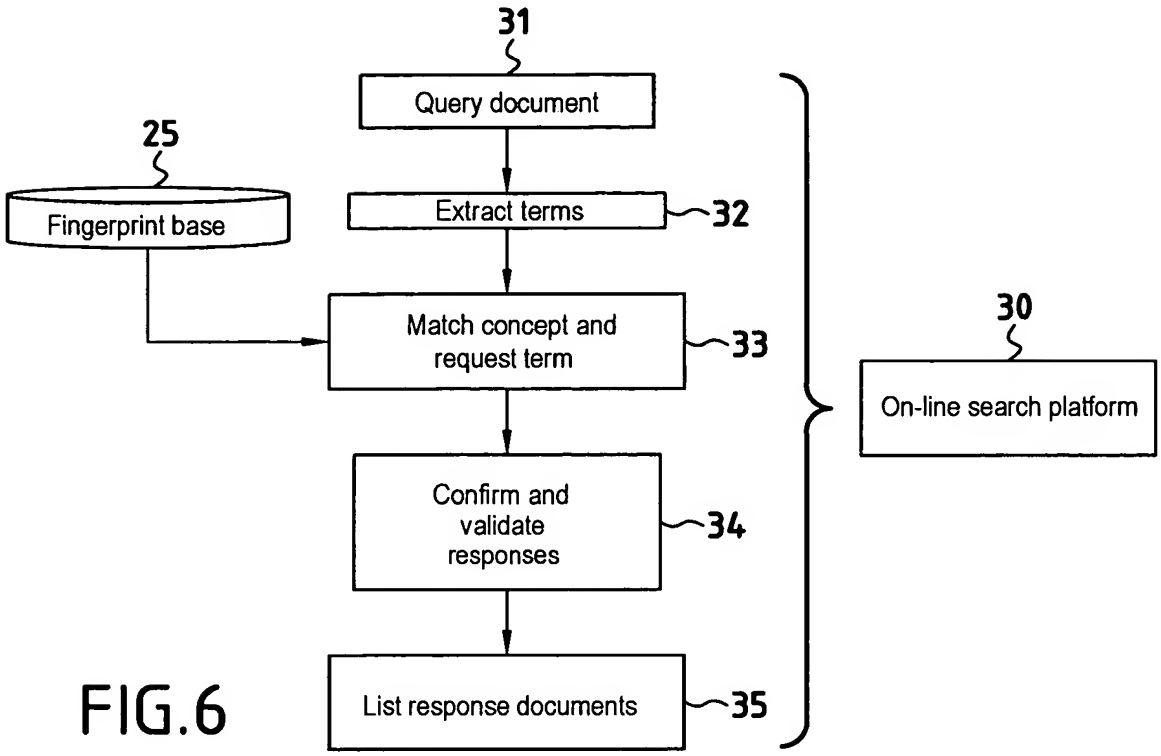
31
Query document
25
Fingerprint base
Extract terms
32
Match concept and request term
33
30
On-line search platform
Confirm and validate responses
34
List response documents
35

FIG.6

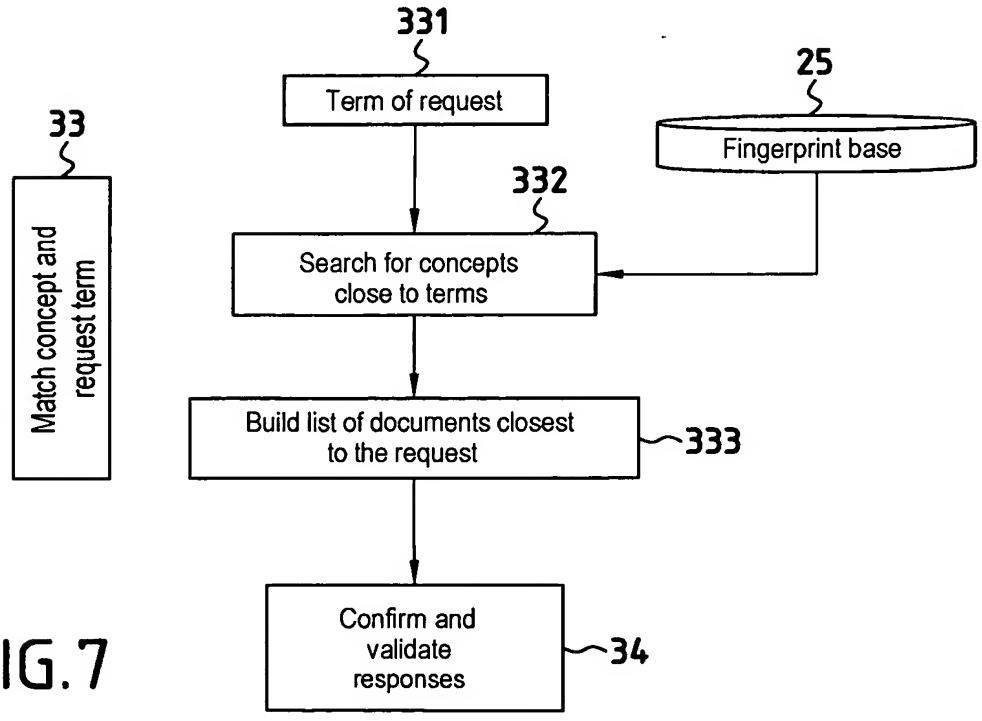
331
Term of request
25
Fingerprint base
33
Match concept and request term
332
Search for concepts close to terms
Build list of documents closest to the request
333
Confirm and validate responses
34

FIG.7

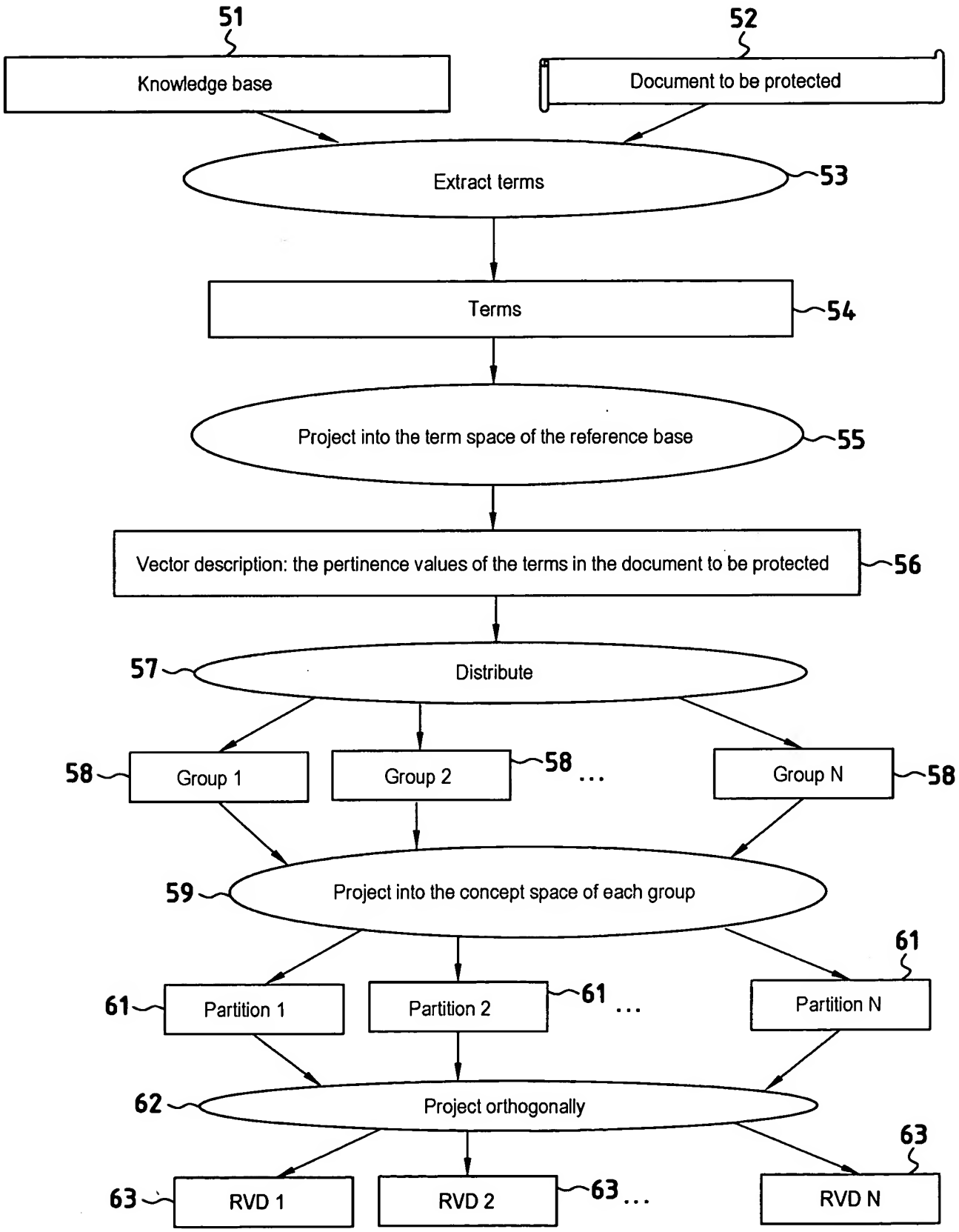
51
Knowledge base
52
Document to be protected
Extract terms
53
Terms
54
Project into the term space of the reference base
55
Vector description: the pertinence values of the terms in the document to be protected
56
57
Distribute
58
Group 1
Group 2
58 ...
Group N
58
59
Project into the concept space of each group
61
61
Partition 1
Partition 2
61 ...
Partition N
62
Project orthogonally
63
63
RVD 1
RVD 2
63 ...
RVD N

FIG.8

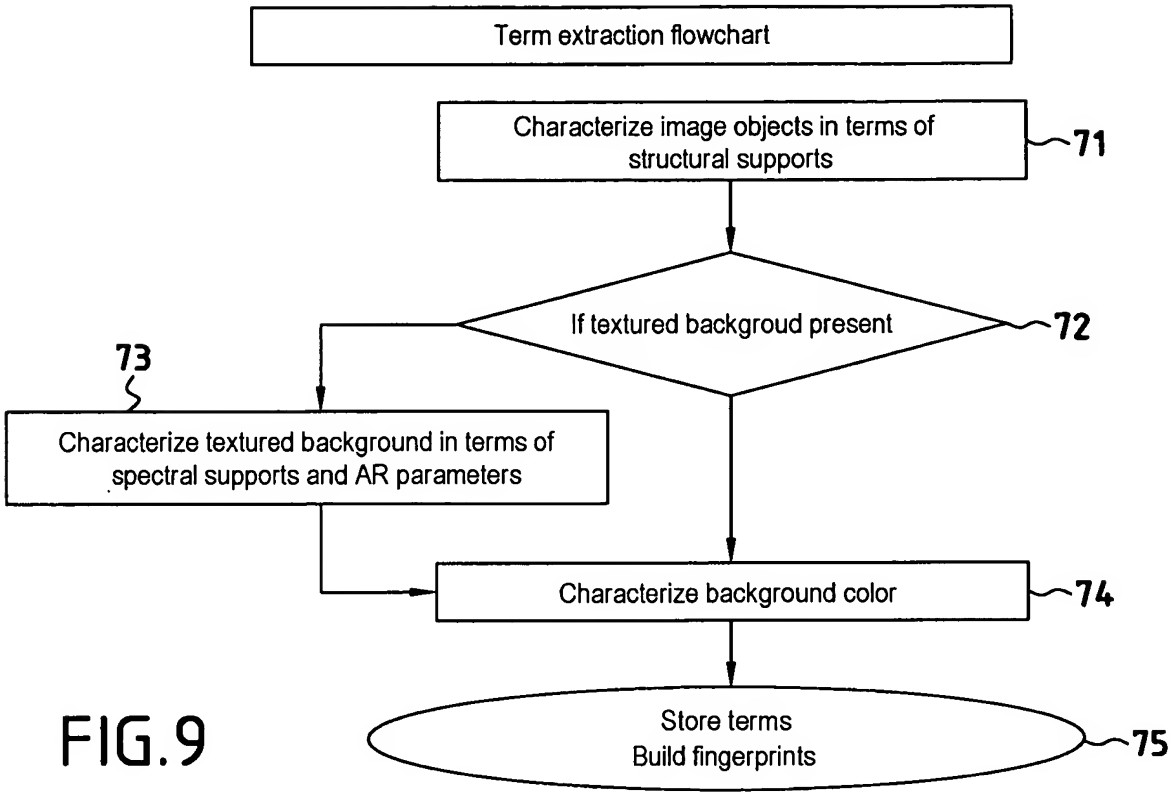
Term extraction flowchart
Characterize image objects in terms of structural supports
71
If textured backgroud present
72
73
Characterize textured background in terms of spectral supports and AR parameters
Characterize background color
74
Store terms
Build fingerprints
75

FIG.9

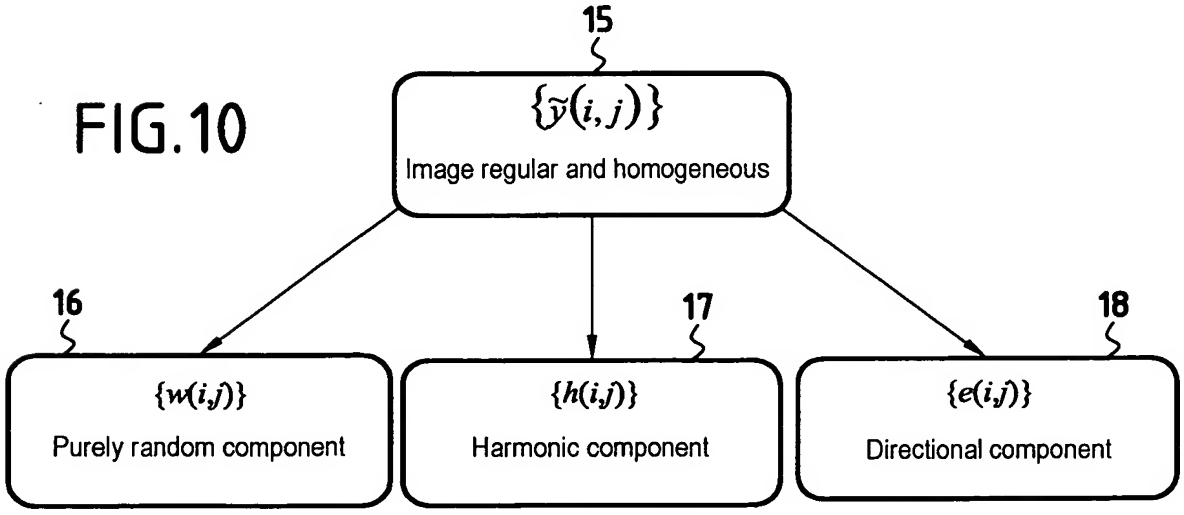
15
$\{\tilde{y}(i,j)\}$
Image regular and homogeneous
16
17
18
$\{w(i,j)\}$
Purely random component
$\{h(i,j)\}$
Harmonic component
$\{e(i,j)\}$
Directional component

FIG.10

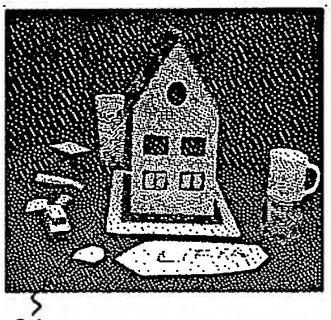

FIG.11

FIG.12

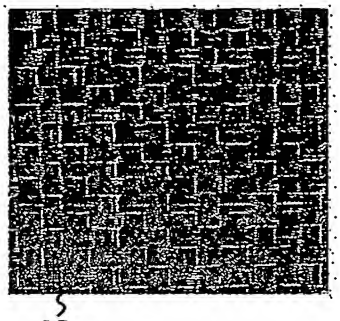

FIG.13

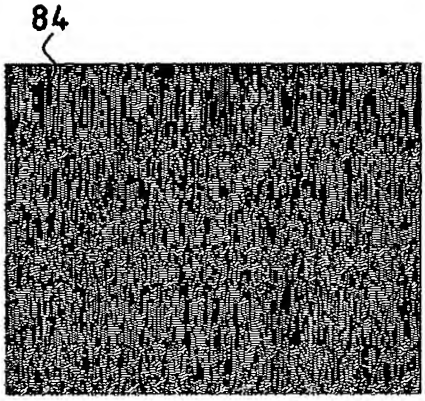

FIG.15a

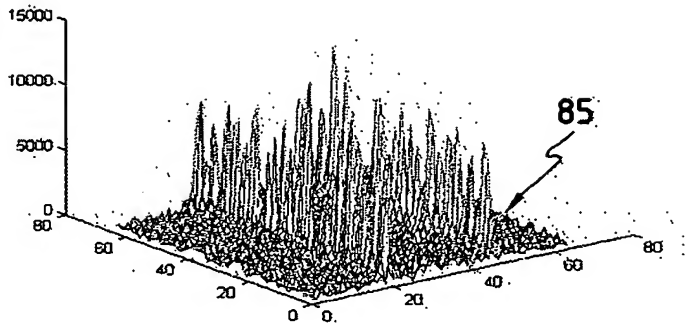

FIG.15a1

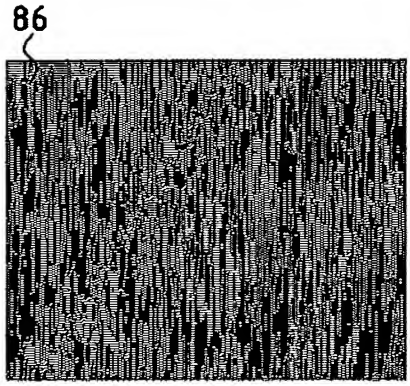

FIG.15b

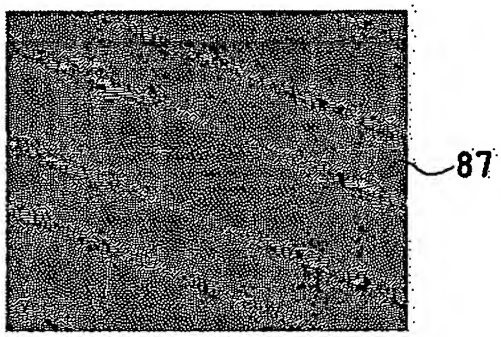

FIG.15b1

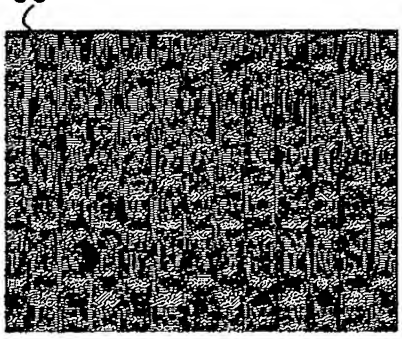

FIG.15c

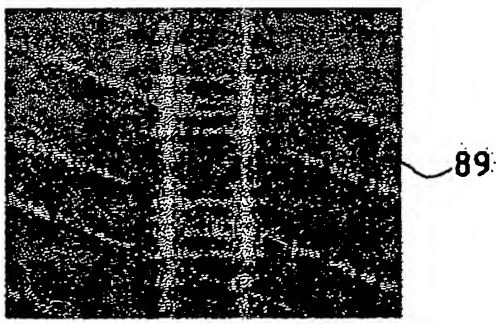

FIG.15c1

FIG.14a

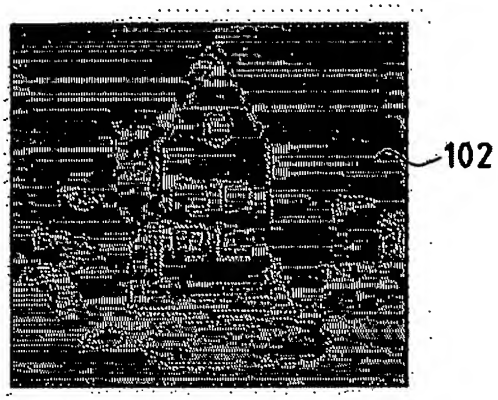

FIG.14b

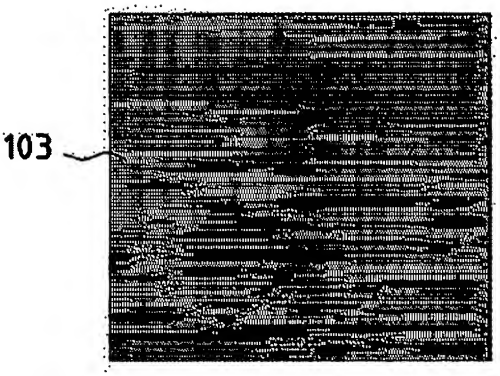

FIG.14c

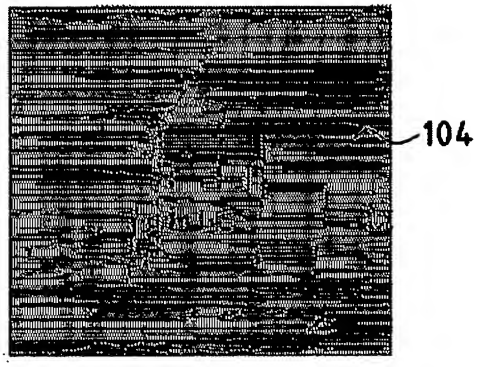

FIG.14d

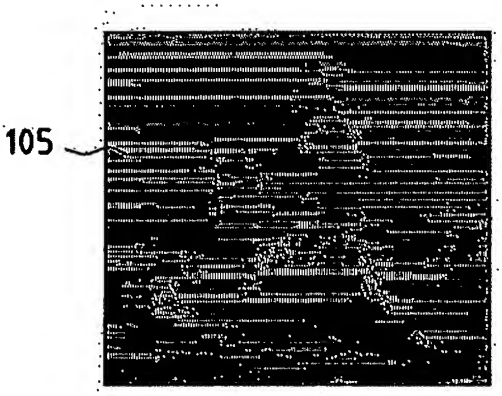

FIG.14e

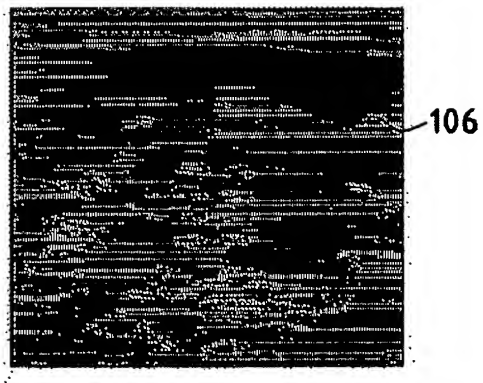

FIG.14f

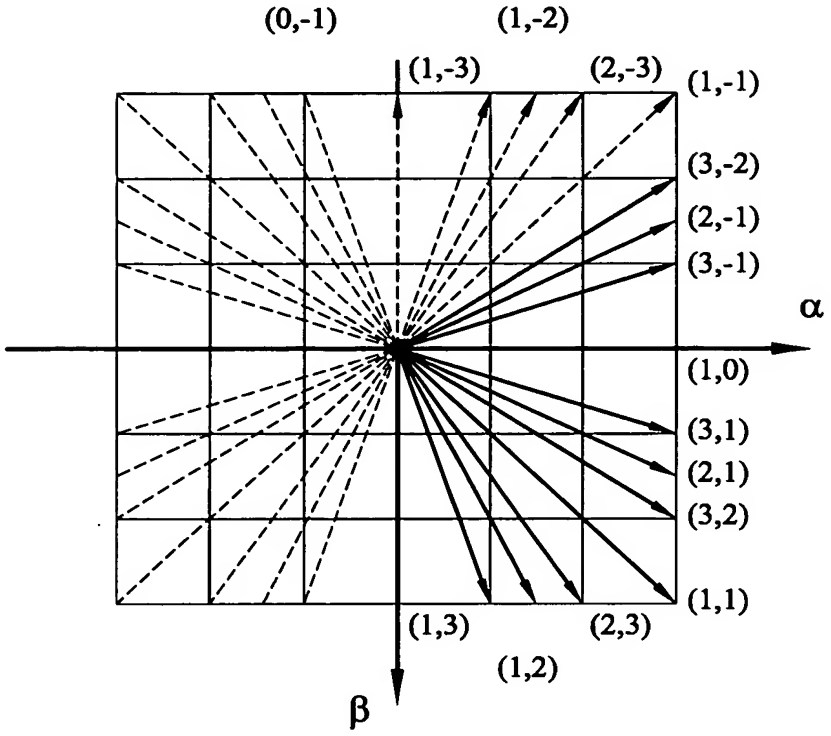
(0,-1)
(1,-2)
(1,-3)
(2,-3)
(1,-1)
(3,-2)
(2,-1)
(3,-1)
α
(1,0)
(3,1)
(2,1)
(3,2)
(1,1)
(1,3)
(2,3)
(1,2)
β

FIG.16

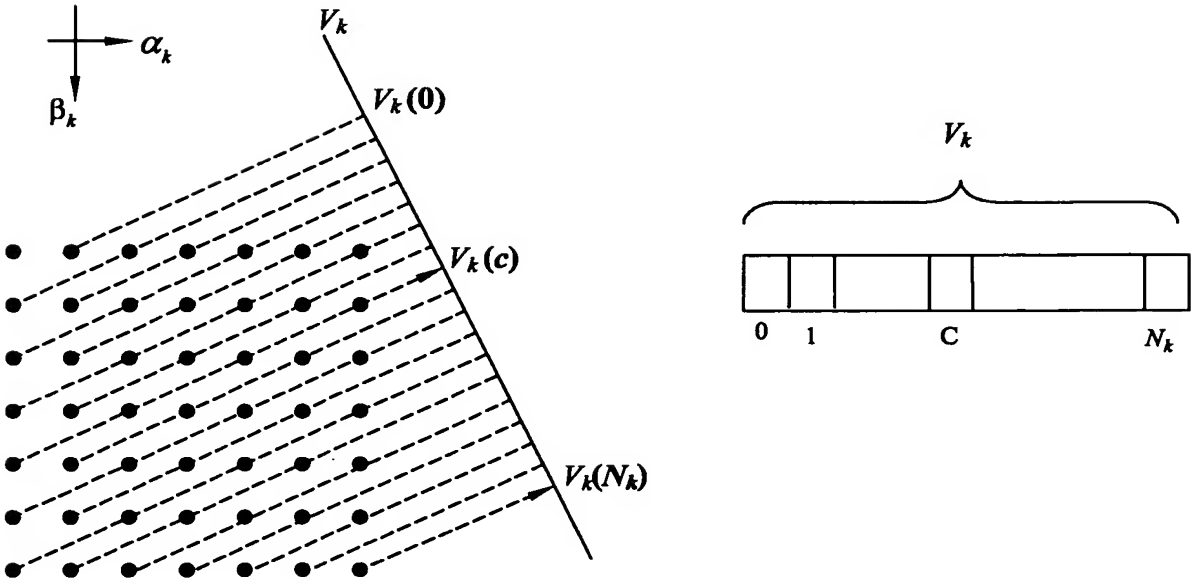
α_k
β_k
V_k
$V_k(0)$
$V_k(c)$
$V_k(N_k)$
V_k
0
1
C
N_k

FIG.17

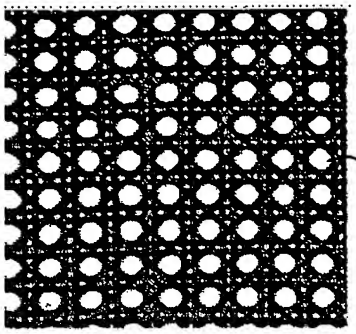

FIG.18a1

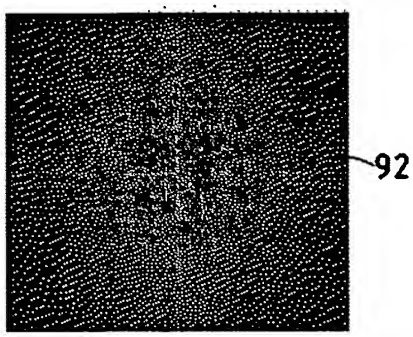

FIG.18a2

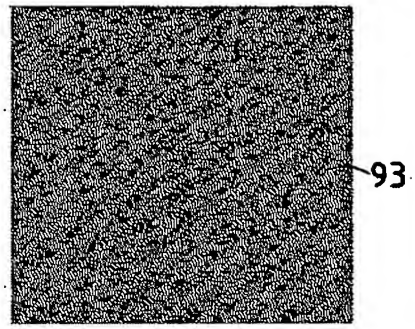

FIG.18b1

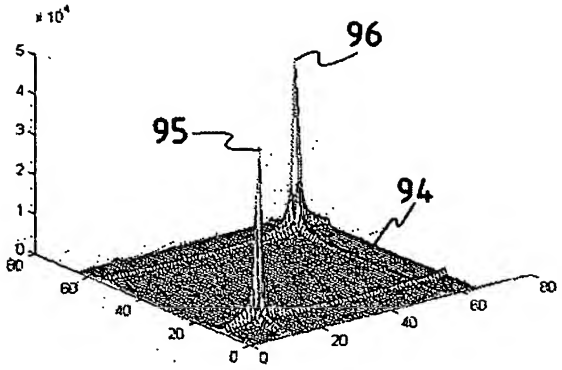

FIG.18b2

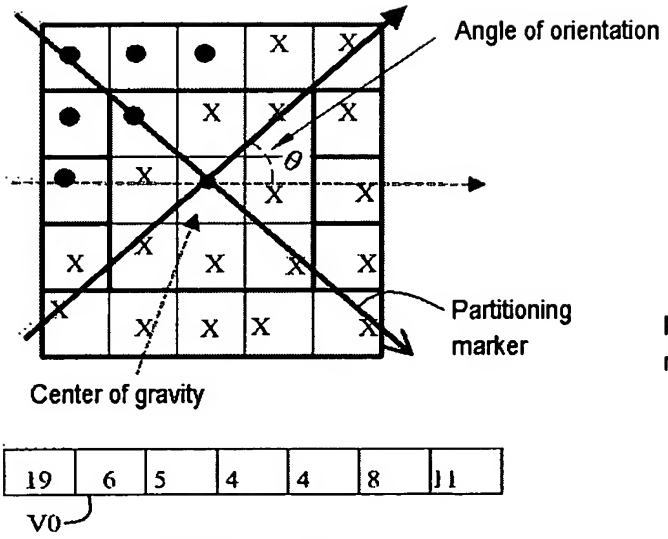

FIG.20

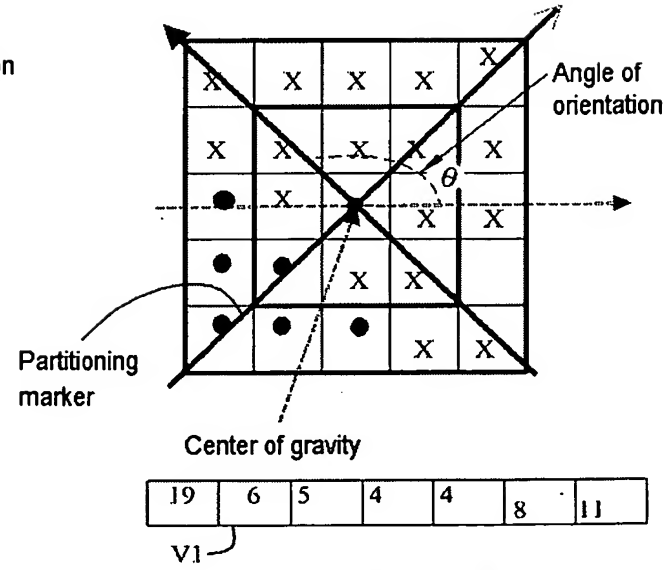

FIG.21

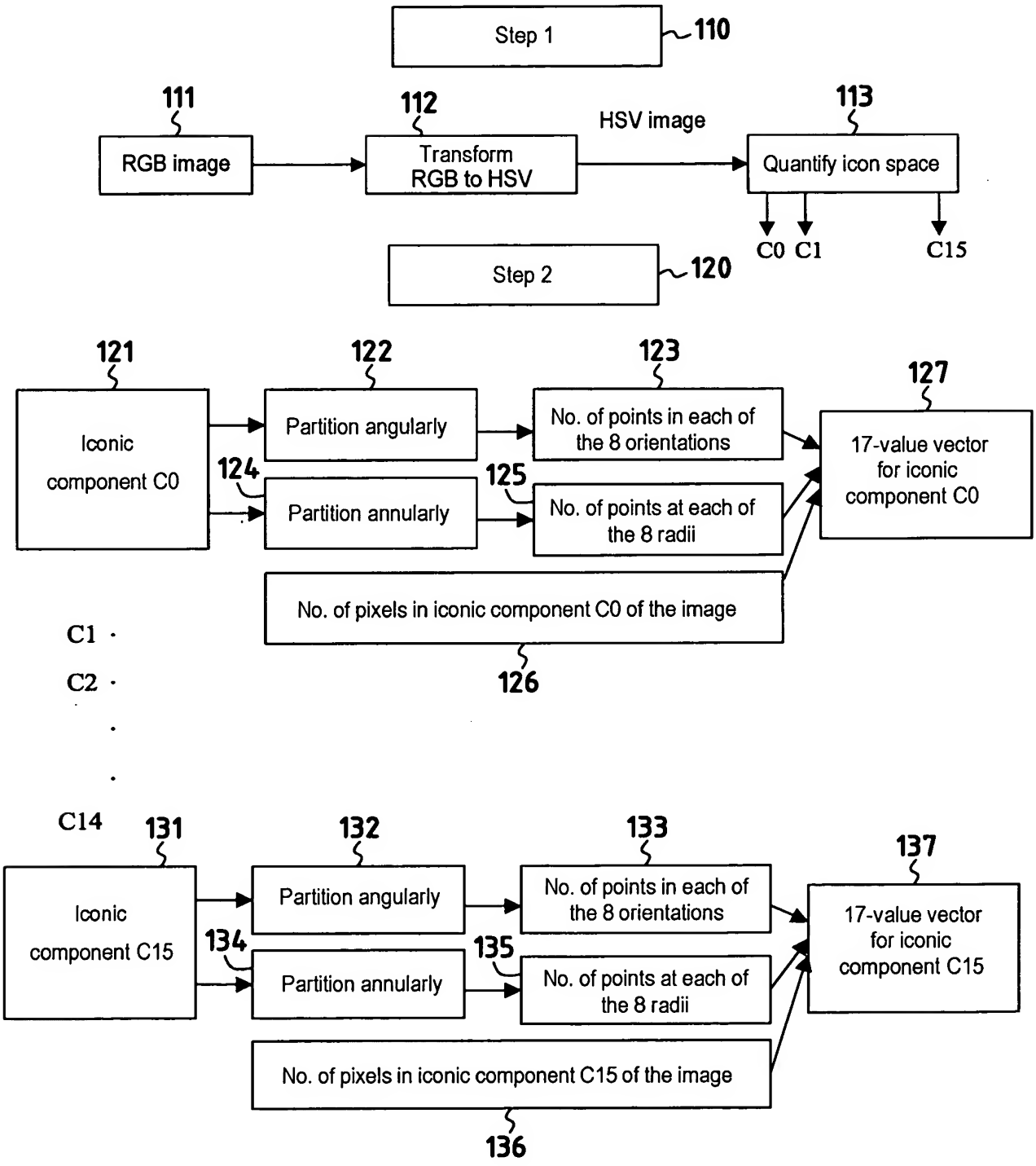
Step 1
110
111
RGB image
112
Transform RGB to HSV
HSV image
113
Quantify icon space
C0 C1
C15
Step 2
120
121
Iconic component C0
122
Partition angularly
123
No. of points in each of the 8 orientations
127
17-value vector for iconic component C0
124
Partition annularly
125
No. of points at each of the 8 radii
No. of pixels in iconic component C0 of the image
126
C1
C2
C14
131
Iconic component C15
132
Partition angularly
133
No. of points in each of the 8 orientations
137
17-value vector for iconic component C15
134
Partition annularly
135
No. of points at each of the 8 radii
No. of pixels in iconic component C15 of the image
136

FIG.19

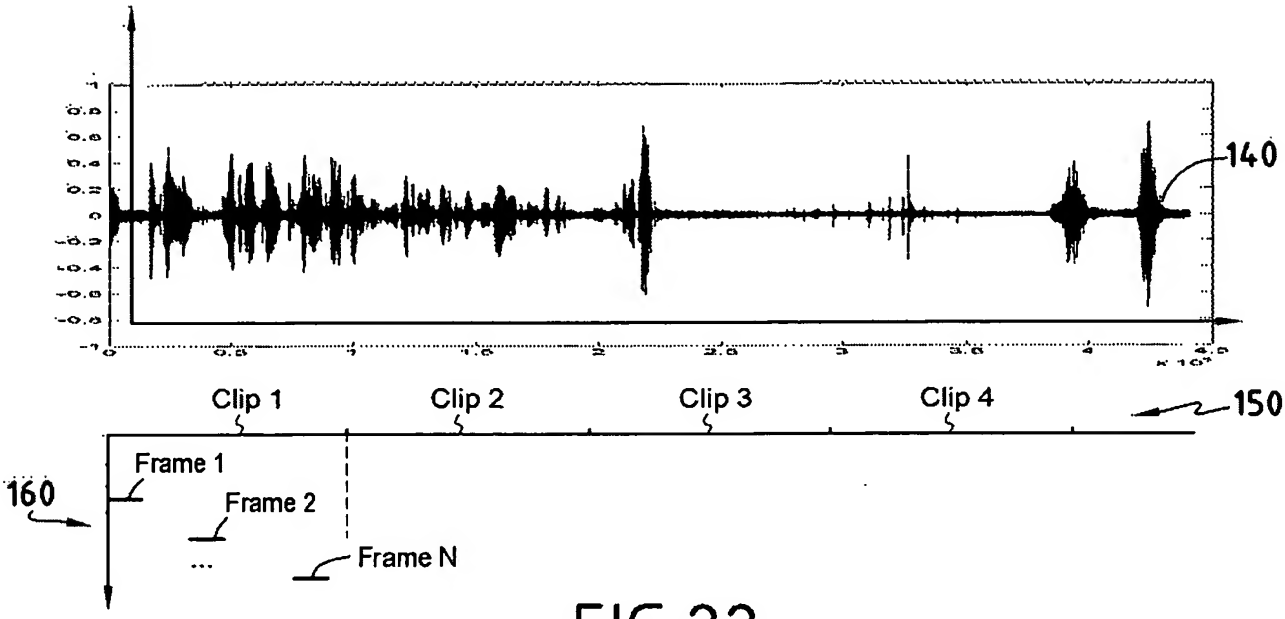

FIG.22

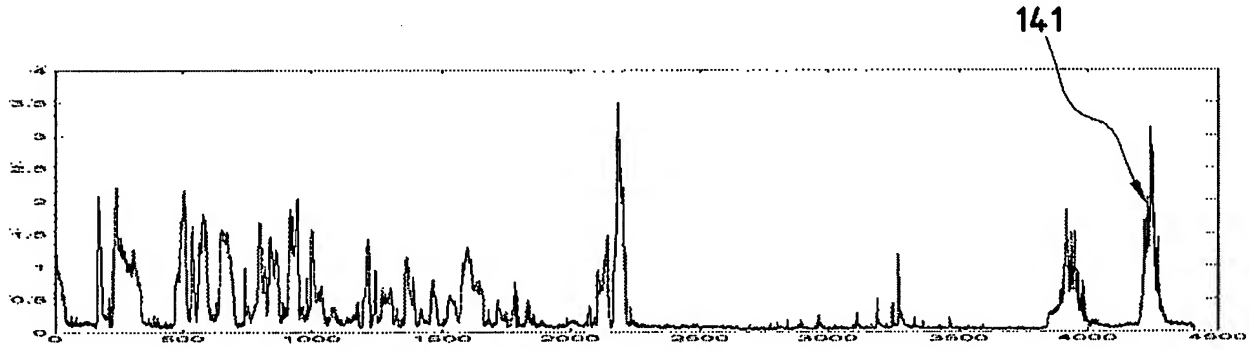

FIG.23a

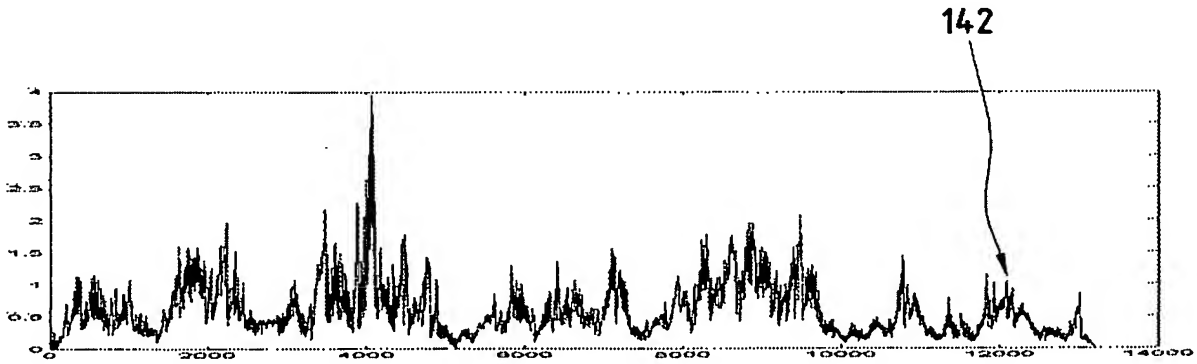

FIG.23b

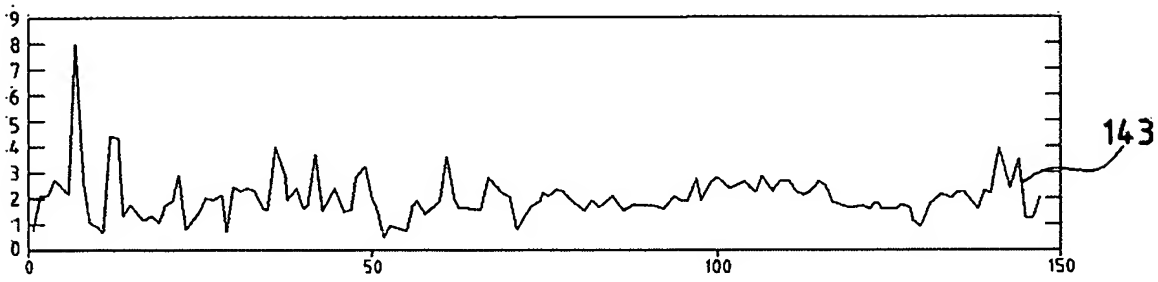

FIG.24a

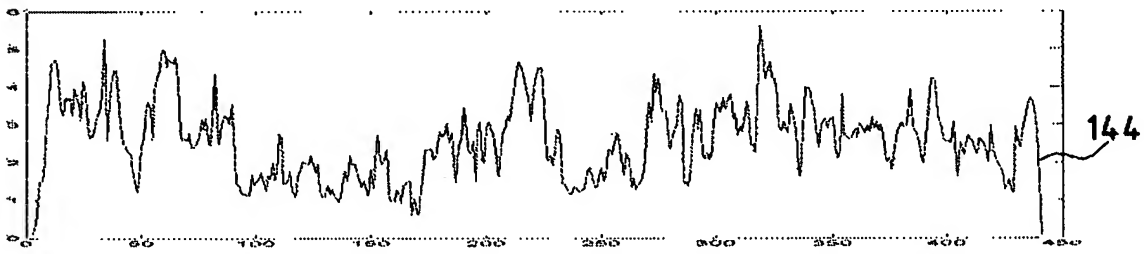

FIG.24b

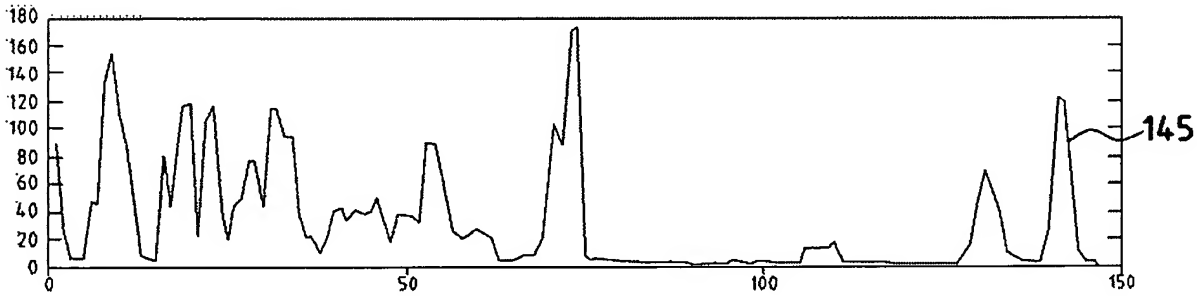

FIG.25a

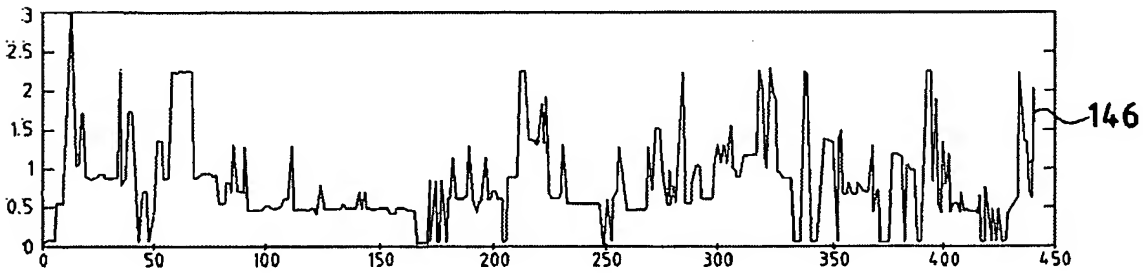

FIG.25b

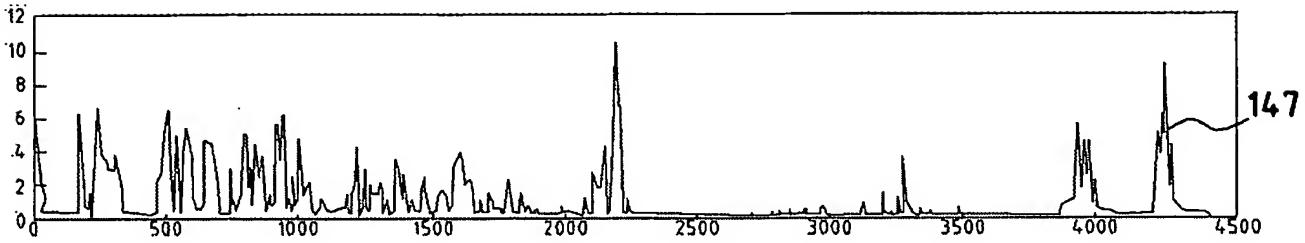

FIG.26a

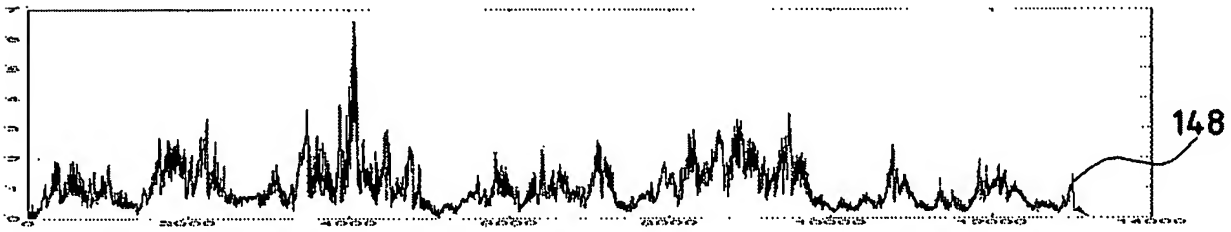

FIG.26b

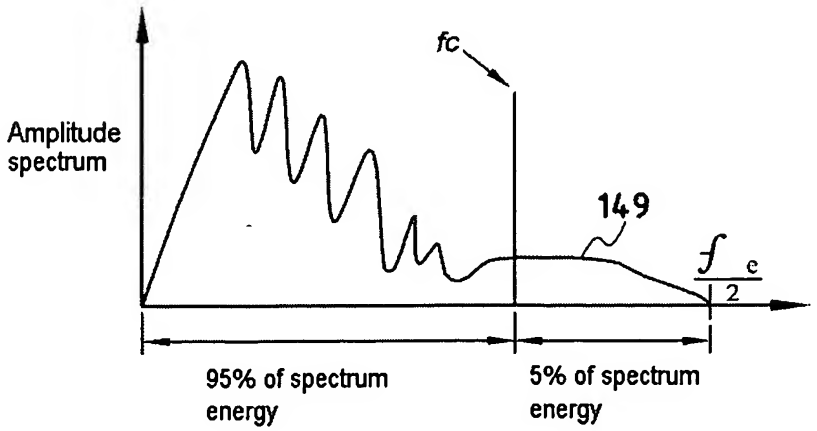

FIG.29

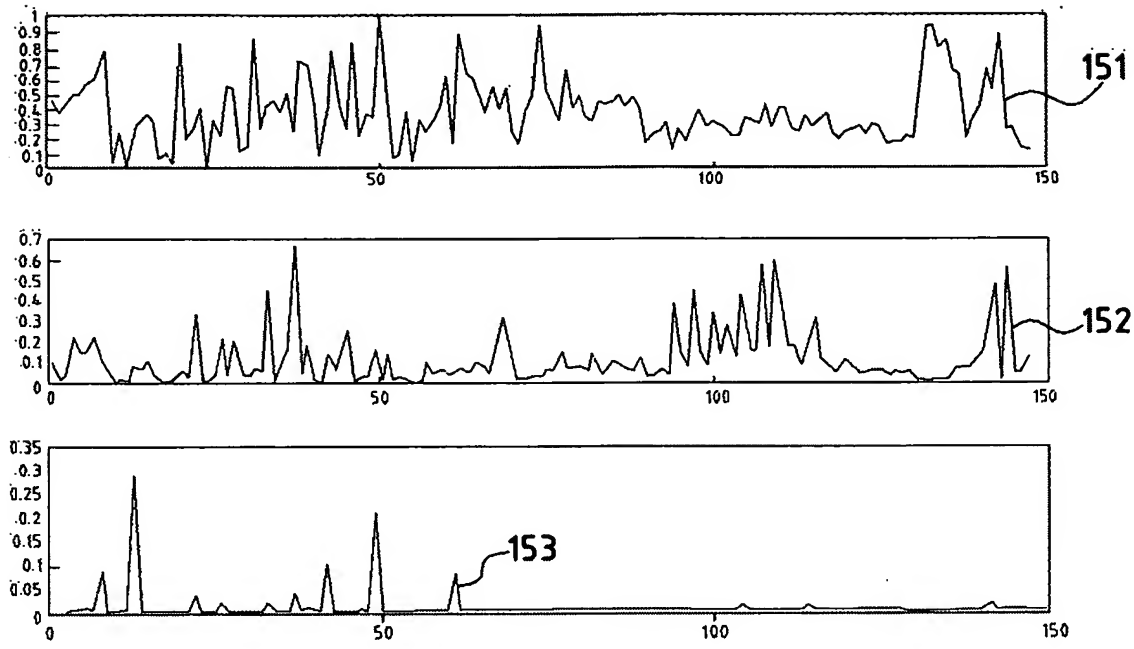

FIG.27a

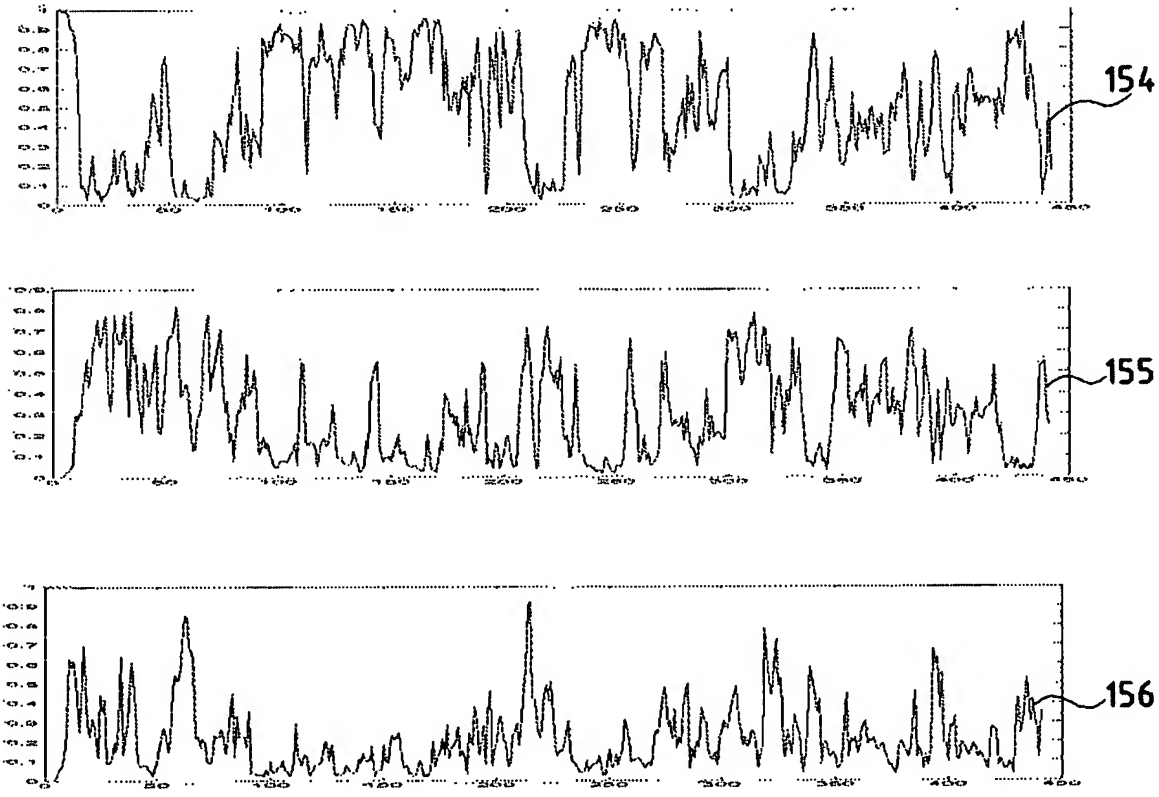

FIG.27b

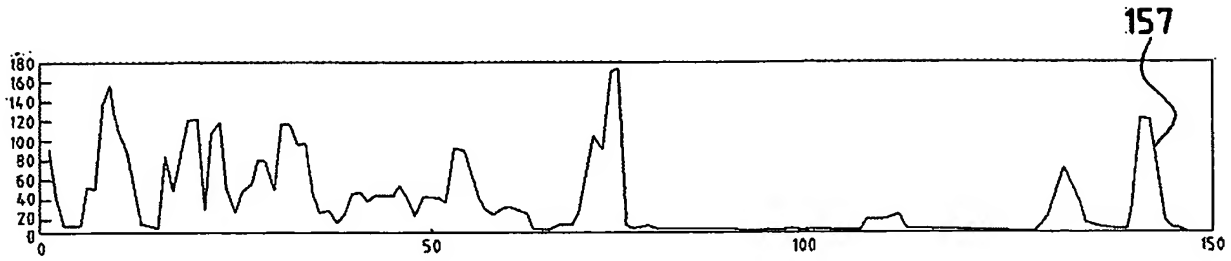

FIG.28a

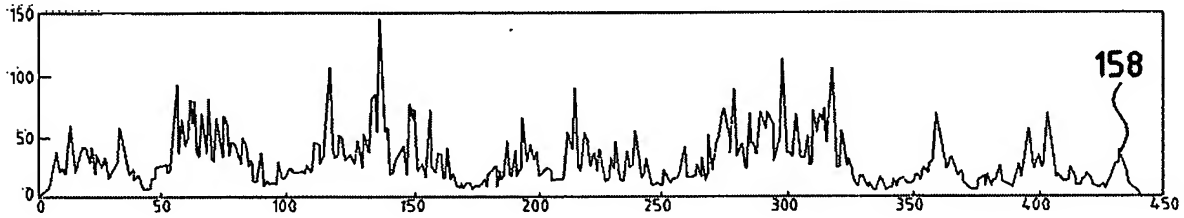

FIG.28b

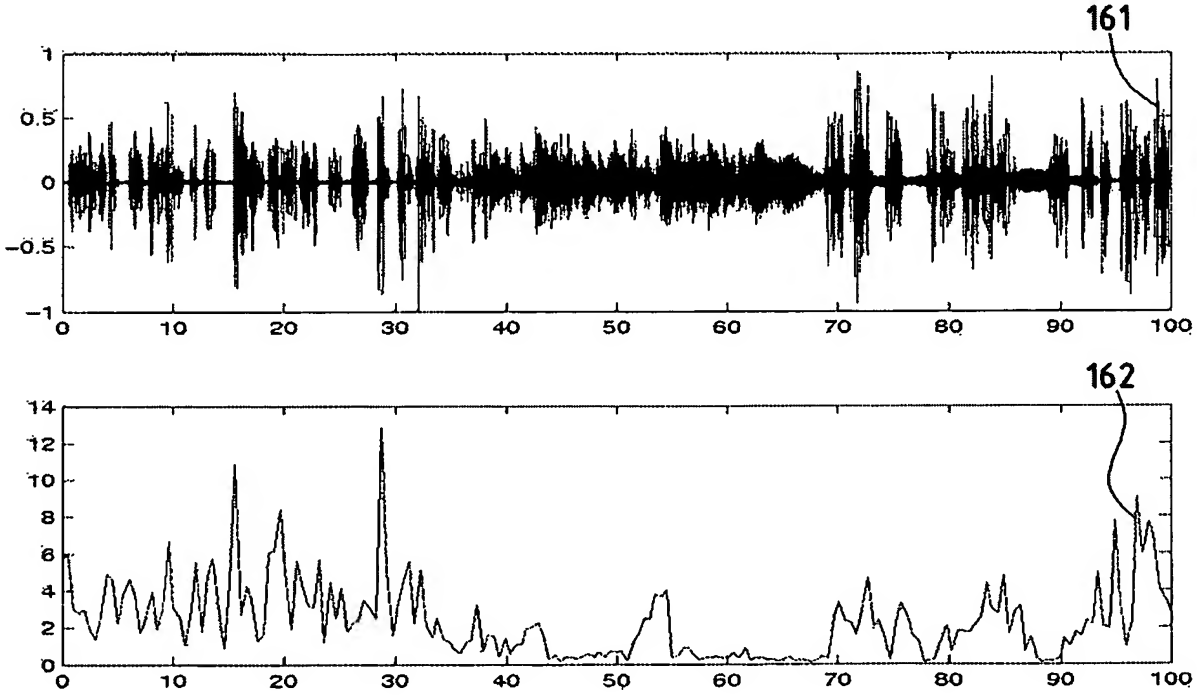

FIG.30